

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4	"4117156".pn. "5091385".pn. "5177073".pn. "5489590".pn.	USPAT	OR	OFF	2004/09/03 11:49
L2	4	1	USPAT	OR	OFF	2004/09/03 12:11
L3	186	514/33.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L4	458	514/510.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L5	398	514/548.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L6	361	552/208.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L7	252	552/243.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L8	280	552/261.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L9	306	552/262.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L10	271	552/265.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12
L11	141	552/266.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:12

L12	2191	3 4 5 6 7 8 9 10 1	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:13
L13	2287	11 12	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:13
L14	5	13 and trematode	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:13
L15	7	13 and trematoda	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:13
L16	4	13 and nematoda	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:13
L17	10	13 and helminth	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:13
L18	15	14 15 16 17	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:15
L19	0	13 and flatworm	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2004/09/03 12:15

e 58322-78-4

E1	1	58322-76-2/RN
E2	1	58322-77-3/RN
E3	1 -->	58322-78-4/RN
E4	1	58322-79-5/RN
E5	1	58322-80-8/RN
E6	1	58322-81-9/RN
E7	1	58322-82-0/RN
E8	1	58322-83-1/RN
E9	1	58322-84-2/RN
E10	1	58322-85-3/RN
E11	1	58322-86-4/RN
E12	1	58322-87-5/RN

=> s e3

L1 1 58322-78-4/RN

=> d

L1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN

RN 58322-78-4 REGISTRY

CN 9,10-Anthracenedione, 1,2,8-trihydroxy-3-methyl- (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Anthraquinone, 1,2,8-trihydroxy-3-methyl- (6CI)

OTHER NAMES:

CN 2-Hydroxychrysophanol

FS 3D CONCORD

MF C15 H10 O5

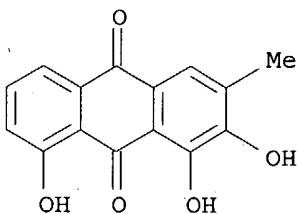
LC STN Files: BEILSTEIN\*, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, IPA, MEDLINE, TOXCENTER, USPATFULL

(\*File contains numerically searchable property data)

DT.CA Caplus document type: Journal; Patent

RL.P Roles from patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)

RL.NP Roles from non-patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

12 REFERENCES IN FILE CA (1907 TO DATE)

12 REFERENCES IN FILE CAPLUS (1907 TO DATE)

1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e 479482-94-5

E1	1	479482-92-3/RN
E2	1	479482-93-4/RN
E3	1 -->	479482-94-5/RN

10/035753

723672

E4 1 479482-95-6/RN  
 E5 1 479482-96-7/RN  
 E6 1 479482-97-8/RN  
 E7 1 479482-98-9/RN  
 E8 1 479482-99-0/RN  
 E9 1 479483-00-6/RN  
 E10 1 479483-01-7/RN  
 E11 1 479483-02-8/RN  
 E12 1 479483-03-9/RN

=> s e3

L2 1 479482-94-5/RN

=> d

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN

RN 479482-94-5 REGISTRY

CN 9,10-Anthracenedione, 1,2,8-trihydroxy-3-(hydroxymethyl)- (9CI) (CA INDEX NAME)

OTHER NAMES:

CN Kwanzoquinone E

FS 3D CONCORD

MF C15 H10 O6

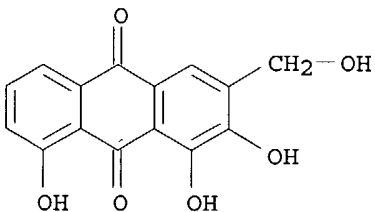
SR CA

LC STN Files: CA, CAPLUS, TOXCENTER, USPATFULL

DT.CA Caplus document type: Journal; Patent

RL.P Roles from patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)

RL.NP Roles from non-patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

4 REFERENCES IN FILE CA (1907 TO DATE)

4 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> file registry

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

4.38

4.59

FILE 'REGISTRY' ENTERED AT 09:49:36 ON 03 SEP 2004

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10/035753

STRUCTURE FILE UPDATES: 1 SEP 2004 HIGHEST RN 737690-81-2  
DICTIONARY FILE UPDATES: 1 SEP 2004 HIGHEST RN 737690-81-2

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more  
information enter HELP PROP at an arrow prompt in the file or refer  
to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> s l1  
L3 1 58322-78-4/RN

=> file caplus	SINCE FILE	TOTAL
COST IN U.S. DOLLARS	ENTRY	SESSION
FULL ESTIMATED COST	0.42	5.01

FILE 'CAPLUS' ENTERED AT 09:49:45 ON 03 SEP 2004  
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FILE COVERS 1907 - 3 Sep 2004 VOL 141 ISS 11  
FILE LAST UPDATED: 2 Sep 2004 (20040902/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

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L4 12 L1

=> s l2  
L5 4 L2

=> s l4 or l5  
L6 12 L4 OR L5

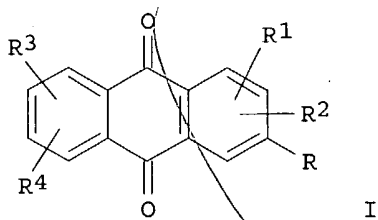
=> d abs bib 1-12 l6

L6 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN  
AB Daylilies (Hemerocallis) are used medicinally in eastern Asia and exts. of  
the plant had been shown to inhibit cell proliferation and induce cancer

cells to undergo differentiation. In our studies of the constituents of *Hemerocallis fulva* var. *Kwanzo* roots, we isolated a series of new [kwanzoquinones A (1), B (2), C (4), D (5), E (6), F (7), G (9)] and known [2-hydroxychrysophanol (3) and rhein (8)] anthraquinones. These compds. were tested in order to determine their potential roles as cancer cell growth inhibitors. Kwanzoquinones A-C and E, kwanzoquinone A and B monoacetates (1a and 2a), 2-hydroxychrysophanol, and rhein inhibited the proliferation of human breast, CNS, colon, and lung cancer cells with GI50 values between 1.8 to 21.1 µg/mL. However, upon exposure of the cancer cells to the GI50 concns. of the bioactive anthraquinones, most of the cancer cell lines exhibited higher than anticipated levels of cell viability. Co-incubation of the anthraquinones with vitamins C and E increased the viability of breast cancer cells. In contrast, vitamins C and E potentiated the cytotoxic effects of the anthraquinones against the colon cancer cells. None of the anthraquinones inhibited the activity of topoisomerase.

AN 2004:78682 CAPLUS  
 DN 140:368230  
 TI Inhibition of human tumor cell proliferation by novel anthraquinones from daylilies  
 AU Cichewicz, Robert H.; Zhang, Yanjun; Seeram, Navindra P.; Nair, Muraleedharan G.  
 CS Department of Horticulture and National Food Safety and Toxicology Center, Bioactive Natural Products and Phytochemicals, Michigan State University, East Lansing, MI, 48824, USA  
 SO Life Sciences (2004), 74(14), 1791-1799  
 CODEN: LIFSAK; ISSN: 0024-3205  
 PB Elsevier Science Inc.  
 DT Journal  
 LA English  
 RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN  
 GI



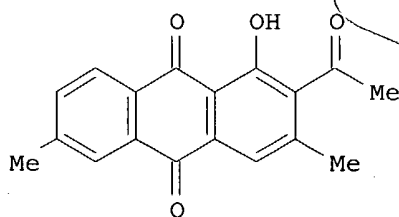
AB Anthraquinones are described which are anthelmintic and in particular, are useful in compns. for inhibiting *Schistosoma* sp. In vitro or in vivo. The preferred anthraquinones have the formula (I) wherein R1, R2, R3, and R4 are each hydrogen, hydroxy, halogen, alkyl, substituted alkyl, alkene, substituted alkene, alkyne, aryl, substituted aryl, cyclic, substituted cyclic, acid group, carbohydrate, or combination thereof, R is a group containing 1 to 12 carbons such as Me, alkyl, substituted alkyl, aldehyde, hydroxy, hydroxymethyl, acid group, 15 carbohydrate, or combination thereof, and the halogen X is I, F, Br, or Cl. The isolation and characterization of anthraquinones from the roots of daylilies (*Hemerocallis fulva*) is described.

AN 2003:856025 CAPLUS  
 DN 139:345896

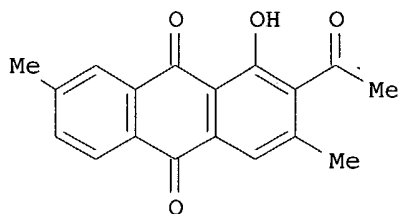
TI Anthelmintic anthraquinones and method of use thereof  
 IN Cichewicz, Robert H.; Nair, Muraleedharan G. Nair; McKerrow, James H.  
 PA Michigan State University, USA; The Regents of the University of California  
 SO PCT Int. Appl., 80 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003089577	A2	20031030	WO 2003-US11303	20030411
	WO 2003089577	A3	20031231		
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	US 2003229032	A1	20031211	US 2002-317906	20021212
	US 2004106686	A1	20040603	US 2003-723671	20031126
	US 2004116361	A1	20040617	US 2003-723672	20031126
	US 2004152645	A1	20040805	US 2004-761071	20040120
PRAI	US 2002-372576P	P	20020415		
	US 2002-389368P	P	20020617		
	US 2002-317906	A	20021212		
OS	MARPAT 139:345896				

L6 ANSWER 3 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN  
 GI



I



II

AB Anthraquinones are described which have anticancer or antitumor activity and which are useful for inhibiting cancer cells and cells comprising

tumors in vitro or in vivo. Anthraquinones such as kwanzoquinones A (I) and B (II) along with six other derivs. were isolated from Hemerocallis fulva plants and their antitumor activity determined

AN 2003:856024 CAPLUS

DN 139:341716

TI Anticancer anthraquinones from Hemerocallis fulva

IN Nair, Muraleedharan G. Nair; Cichewicz, Robert H.; Seeram, Navindra P.; Zhang, Yanjun

PA Michigan State University, USA

SO PCT Int. Appl., 60 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003089576	A2	20031030	WO 2003-US11302	20030411
	WO 2003089576	A3	20031231		
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	US 2003229032	A1	20031211	US 2002-317906	20021212
PRAI	US 2002-372576P	P	20020415		
	US 2002-389368P	P	20020617		
	US 2002-317906	A	20021212		
	US 2003-355483	A	20030131		

L6 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN

AB Two new anthraquinones, 7-hydroxy-1,2,8-trimethoxy-3-methylanthraquinone and 7,8-dihydroxy-1,2-dimethoxy-3-methylanthraquinone, were isolated from the roots of Hemerocallis fulva. Their structures were established on the basis of spectral evidence (NMR and MS).

AN 2003:659023 CAPLUS

DN 140:284266

TI Two new anthraquinones from Hemerocallis fulva

AU Huang, Yu-Ling; Chow, Fang-Hua; Shieh, Bor-Jinn; Ou, Jun-Chih; Chen, Chien-Chih

CS National Research Institute of Chinese Medicine, Taipei, Taiwan, Peop. Rep. China

SO Chinese Pharmaceutical Journal (Taipei, Taiwan) (2003), 55(1), 83-86

CODEN: CPHJEP; ISSN: 1016-1015

PB Pharmaceutical Society of Republic of China

DT Journal

LA English

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN

AB Schistosomiasis is a debilitating disease caused by parasitic trematodes of the genus Schistosoma that afflicts 200 million people worldwide. Daylilies (Hemerocallis spp.) have been used in Asia for the treatment of schistosomiasis; however, the active principles have not been fully characterized. In our studies of Hemerocallis fulva Kwanzo' Kaempfer

roots, we have isolated seven new anthraquinones, kwanzoquinones A (1), B (2), C (4), D (5), E (6), F (7), and G (9), two known anthraquinones, 2-hydroxychrysophanol (3) and rhein (8), one new naphthalene glycoside, 5-hydroxydianellin (11), one known naphthalene glycoside, dianellin (10), one known flavone, 6-methyluteolin (12), and  $\alpha$ -tocopherol. The structures of the compds. were elucidated by spectroscopic and chemical methods. Compds. 1-11 and the monoacetates of kwanzoquinones A and B, 1a and 2a, resp., were tested for their activity against multiple life-stages of *Schistosoma mansoni*. Compound 3 immobilized all cercariae within 15 s at 3.1  $\mu$ g/mL. However, upon removal of the compound, 20% of the immobilized cercariae recovered after 24 h. In contrast, compound 6 immobilized cercariae within 12-14 min at 25  $\mu$ g/mL. Following removal of the compound, all cercariae died within 24 h. The adult worms were also immobilized within 16 h by compds. 3 and 6 at 50  $\mu$ g/mL. None of the compds. had an effect on the schistosomula stage.

AN 2002:788802 CAPLUS

DN 138:52682

TI Kwanzoquinones A-G and other constituents of *Hemerocallis fulva* 'Kwanzo' roots and their activity against the human pathogenic trematode *Schistosoma mansoni*

AU Cichewicz, Robert H.; Lim, Kee-Chong; McKerrow, James H.; Nair, Muraleedharan G.

CS Department of Horticulture and National Food Safety and Toxicology Center, Bioactive Natural Products and Phytochemicals, Michigan State University, East Lansing, MI, 48824, USA

SO Tetrahedron (2002), 58(42), 8597-8606 *Bad DLR*  
CODEN: TETRAB; ISSN: 0040-4020

PB Elsevier Science Ltd.

DT Journal

LA English

RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN

AB Chromatog. separation and spectroscopic anal. of exts. of the five Kenyan Myrsinaceae species has shown the presence of the acetogenic compds. emodin, physcion, chrysophanol, 2-hydroxychrysophanol, and nepodin.

AN 1995:178753 CAPLUS

DN 122:51332

TI Polynuclear acetogenic pigments in the fruits of the Myrsinaceae

AU Midiwo, J. O.; Arot, M. M.

CS Department Chemistry, University Nairobi, Nairobi, Kenya

SO International Journal of BioChemPhysics (1993), 2(1-2), 115-16  
CODEN: IJBOEY; ISSN: 1019-7648

DT Journal

LA English

L6 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN

AB Bioactivity-directed fractionation of the EtOH extract of roots of *M. africana*, using lethality to brine shrimp, led to the isolation and identification of emodin and 2-hydroxychrysophanol as cytotoxic components, the latter being a new natural product. Nepodin and 5-methoxy-7-hydroxyphthalide were also isolated and identified by mass spectroscopy, <sup>1</sup>H NMR, IR spectroscopy, and/or UV spectra, and by those in the literature. These second two compds. were not significantly cytotoxic.

AN 1989:591446 CAPLUS

DN 111:191446

TI Bioactive compounds from the root of *Myrsine africana*

AU Li, Xiaohua; McLaughlin, Jerry L.

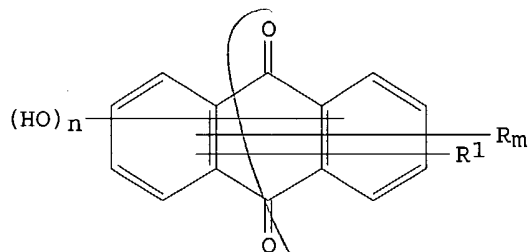
CS Sch. Pharm. Pharmacol Sci., Purdue Univ., West Lafayette, IN, 47907, USA

SO Journal of Natural Products (1989), 52(3), 660-2  
CODEN: JNPRDF; ISSN: 0163-3864  
DT Journal  
LA English  
OS CASREACT 111:191446

L6 ANSWER 8 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN  
AB Cycloadducts from naphthoquinonoid dienophiles and 1-methoxy-1-(trimethylsilyloxy)butadienes undergo controlled aromatization to form chiefly  $\alpha$ -hydroxy- or  $\alpha$ -methoxyanthraquinones. This gave several natural O-Me polyoxyanthraquinones, e.g. obtusifolin, aurantioobtusin, chrysoobutusin.

AN 1987:406908 CAPLUS  
DN 107:6908  
TI Synthesis of specifically O-alkylated anthraquinones by cycloaddition  
AU Cameron, Donald W.; Feutrill, Geoffrey I.; Gamble, Glenn B.; Stavrakis, John  
CS Dep. Org. Chem., Univ. Melbourne, Parkville, 3052, Australia  
SO Tetrahedron Letters (1986), 27(41), 4999-5002  
CODEN: TELEAY; ISSN: 0040-4039  
DT Journal  
LA English  
OS CASREACT 107:6908

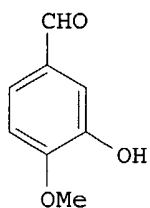
L6 ANSWER 9 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN  
GI



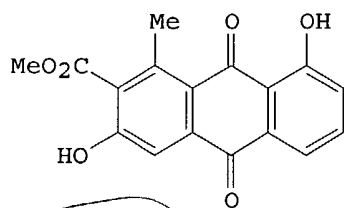
AB The proton NMR of the hydroxyanthraquinone derivs. (I; R = MeO, HOCH<sub>2</sub>; R<sub>1</sub> = H, Me, O<sub>2</sub>N, HO<sub>2</sub>CCH<sub>2</sub>CH<sub>2</sub>; m = 0-2; n = 1-4) was studied and the chemical shifts assigned. The H bonding strengths were estimated by the HMO method. A linear relationship was observed between  $\Delta\delta_{OH}$  values and the charge d. of the donor atom (qCO) in I with a peri-OH group, thus the intramol. H bonding strength was dominated by the magnitude of qCO.

AN 1985:220356 CAPLUS  
DN 102:220356  
TI Proton NMR of hydroxyl groups of substituted hydroxyanthraquinones  
AU Song, Guoqiang; Wu, Jian; He, Xianguo  
CS Shanghai Inst. Mater. Med., Acad. Sin., Shanghai, Peop. Rep. China  
SO Huaxue Xuebao (1985), 43(2), 145-9  
CODEN: HHHPA4; ISSN: 0567-7351  
DT Journal  
LA Chinese  
OS CASREACT 102:220356

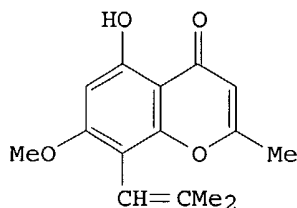
L6 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN  
GI



I



II



III

AB In phenolic compds. with conjugated carbonyl groups, e.g., I, II, III, the chemical shifts of the aromatic protons were shifted downfield by acetylation of

the OH group. Using 32 compds., the shift increments were found to be 0.17 (o-), 0.10 (m-), and 0.39 (p-), resp. The results were verified by HMO calcns.

AN 1984:174157 CAPLUS

DN 100:174157

TI Effect of acetylation on chemical shifts in phenolic systems with conjugated carbonyl groups

AU Song, Guoqiang; Zhou, Bingnan; Wu, Jian

CS Shanghai Inst. Mater. Med., Acad. Sin., Shanghai, Peop. Rep. China

SO Fenzi Kexue Yu Huaxue Yanjiu (1983), 3(4), 39-46

CODEN: FKYYDG

DT Journal

LA Chinese

L6 ANSWER 11 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN

AB Title only translated.

AN 1976:43690 CAPLUS

DN 84:43690

TI Hydrolysis of chrysophanol monobromide

AU Chumbalov, T. K.; Nazarova, V. D.; Muzychkina, R. A.

CS USSR

SO Khimiya I Khim. Tekhnol. (1974), (15), 58-9

From: Ref. Zh., Khim. 1975, Abstr. No. 19B1068

DT Journal

LA Russian

L6 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN

AB Seeds of *C. obtusifolia* (1 kg.) extracted 3 times with 2 l. CHCl<sub>3</sub> and 250 cc. 20% H<sub>2</sub>SO<sub>4</sub> and the concentrated extract chromatographed over CaHPO<sub>4</sub> with C<sub>6</sub>H<sub>6</sub> as developer gave 2 yellow bands. The 1st developed band extracted with petr. ether and rechromatographed over CaHPO<sub>4</sub> yielded 0.2 g. chrysophanol (I), m. 193-4°, and 0.01 g. physcion, m. 206°, each identical by mixed m.p. with an authentic sample. The 2nd developed band yielded 0.2 g. Cl<sub>6</sub>H<sub>12</sub>O<sub>5</sub>, m. 237-8°, here named obtusifolin (II), containing 1 MeO group, insol. in H<sub>2</sub>O and 5% NaHCO<sub>3</sub>, soluble in Na<sub>2</sub>CO<sub>3</sub> (orange), showing a purple-blue color in concentrated H<sub>2</sub>SO<sub>4</sub>, brown in FeCl<sub>3</sub>, orange in alc. Mg(OAc)<sub>2</sub>, and with infrared absorption characteristic of a free HO group and a chelated and a nonchelated CO group; di-Ac derivative (III), m. 187-8°, insol. in Na<sub>2</sub>CO<sub>3</sub> and showing no color in FeCl<sub>3</sub> or alc.

Mg(OAc)<sub>2</sub>. These facts indicated that II is probably a β-HO derivative of anthraquinone (IV). II (0.1 g.) refluxed 8 hrs. (or 20 hrs.) with 50 cc. Me<sub>2</sub>CO, 1.5 g. K<sub>2</sub>CO<sub>3</sub>, and 2 cc. Me<sub>2</sub>SO<sub>4</sub> (or 2 cc. Et<sub>2</sub>SO<sub>4</sub>), the solvent evaporated, and the residue heated on a water bath with 5% KOH to decompose Me<sub>2</sub>SO<sub>4</sub> (or Et<sub>2</sub>SO<sub>4</sub>) yielded 0.08 g. di-Me ether (V) of II, m. 145-6° [or 0.08 g. di-Et ether (VI) of II, m. 127°], insol. in 5% NaOH and showing no color with FeCl<sub>3</sub>. II (0.1 g.) kept overnight at room temperature with CH<sub>2</sub>N<sub>2</sub> in ether yielded 0.09 g. mono-Me ether (VII), m. 172.5°, soluble in 5% NaOH and showing brown color with FeCl<sub>3</sub>. II (0.12 g.) refluxed 5 hrs. at 160-80° with 20 cc. AcOH and 20 cc. 48% HBr (or II heated 2 hrs. with concentrated H<sub>2</sub>SO<sub>4</sub> on a steam bath) and the mixture poured into H<sub>2</sub>O yielded 0.08 g. C<sub>15</sub>H<sub>10</sub>O<sub>5</sub>, m. 255°, here named norobtusifolin (VIIa), purple in Na<sub>2</sub>CO<sub>3</sub>, purple-blue in concentrated H<sub>2</sub>SO<sub>4</sub>, dark brown with FeCl<sub>3</sub>, and blue-purple with Mg(OAc)<sub>2</sub>; tri-Ac derivative (VIII), m. 221-2°; tri-Me ether identical with V. II (0.5 g.) (or VIIa) refluxed 5 hrs. with 0.5 g. red P, 15 cc. AcOH, and 3 cc. HI (d. 1.7), and the cooled mixture poured into H<sub>2</sub>O gave the crude reduction product, which dissolved in 20 cc. AcOH, kept 30 min. at room temperature with 0.3 g. CrO<sub>3</sub> in 15 cc. AcOH, diluted with H<sub>2</sub>O, and extracted with ether yielded 0.05 g. I, m. 193-4°, and di-Ac derivative, m. 208°, each identical by mixed m.p. with an authentic sample. Thus, VIIa was shown to be a β-HO derivative of I; it is a mordant dye, and its ultraviolet absorption is almost identical with that of the 1,2,8-(HO)<sub>3</sub> derivative of IV. II cannot be a 1,2-(HO)<sub>2</sub> derivative because of its orange color with alc. Mg(OAc)<sub>2</sub>, but must be the 3(or 6), 1,2,8-Me(MeO)(HO)<sub>2</sub> derivative of IV. To determine the position of

the Me group, 0.25 g. VI in 10 cc. Ac<sub>2</sub>O and 10 cc. AcOH was treated dropwise during 30 min. on a steam bath with 1 g. CrO<sub>3</sub> in 5 cc. AcOH containing 2 drops H<sub>2</sub>O, heated an addnl. 30 min., the mixture poured into 300 cc. hot H<sub>2</sub>O, cooled, filtered, and the filtrate extracted with ether to yield 0.01 g. 3-ethoxyphthalic anhydride, m. 146°, identical with an authentic sample, obtained also from the similar oxidation of the di-Et ether of chrysazin (IX), m. 173-4°, 0.08 g. from 0.1 g. IX. II is therefore established as the 3,1,2,8-Me(MeO)(HO)<sub>2</sub> derivative of IV. Ultraviolet data for VIIa and VIII and infrared data for II, VIIa, III, and VII help confirm their structures.

AN 1959:17152 CAPLUS  
 DN 53:17152  
 OREF 53:3168f-i,3169a-c  
 TI Constituents of the seeds of *Cassia obtusifolia*. I. The structure of obtusifolin  
 AU Takido, Michio  
 CS Nihon Univ., Tokyo  
 SO Chemical & Pharmaceutical Bulletin (1958), 6, 397-400  
 CODEN: CPBTAL; ISSN: 0009-2363  
 DT Journal  
 LA Unavailable

=>

=> e 479482-95-6

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E2	1	479482-94-5/RN
E3	1 -->	479482-95-6/RN
E4	1	479482-96-7/RN
E5	1	479482-97-8/RN
E6	1	479482-98-9/RN
E7	1	479482-99-0/RN
E8	1	479483-00-6/RN
E9	1	479483-01-7/RN
E10	1	479483-02-8/RN
E11	1	479483-03-9/RN
E12	1	479483-04-0/RN

=> s e3

L7 1 479482-95-6/RN

=> file caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.42	37.35
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-8.40

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FILE COVERS 1907 - 3 Sep 2004 VOL 141 ISS 11  
FILE LAST UPDATED: 2 Sep 2004 (20040902/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l7

L8 3 L7

=> d bib abs 1-3 l8

L8 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2004:78682 CAPLUS  
DN 140:368230  
TI Inhibition of human tumor cell proliferation by novel anthraquinones from daylilies  
AU Cichewicz, Robert H.; Zhang, Yanjun; Seeram, Navindra P.; Nair, Muraleedharan G.

CS Department of Horticulture and National Food Safety and Toxicology Center,  
Bioactive Natural Products and Phytochemicals, Michigan State University,  
East Lansing, MI, 48824, USA  
SO Life Sciences (2004), 74(14), 1791-1799  
CODEN: LIFSAK; ISSN: 0024-3205  
PB Elsevier Science Inc.  
DT Journal  
LA English  
AB Daylilies (*Hemerocallis*) are used medicinally in eastern Asia and exts. of  
the plant had been shown to inhibit cell proliferation and induce cancer  
cells to undergo differentiation. In our studies of the constituents of  
*Hemerocallis fulva* var. *Kwanzo* roots, we isolated a series of new  
[kwanzoquinones A (1), B (2), C (4), D (5), E (6), F (7), G (9)] and known  
[2-hydroxychrysophanol (3) and rhein (8)] anthraquinones. These compds.  
were tested in order to determine their potential roles as cancer cell growth  
inhibitors. Kwanzoquinones A-C and E, kwanzoquinone A and B monoacetates  
(1a and 2a), 2-hydroxychrysophanol, and rhein inhibited the proliferation  
of human breast, CNS, colon, and lung cancer cells with GI50 values  
between 1.8 to 21.1  $\mu\text{g/mL}$ . However, upon exposure of the cancer cells  
to the GI50 concns. of the bioactive anthraquinones, most of the cancer  
cell lines exhibited higher than anticipated levels of cell viability.  
Co-incubation of the anthraquinones with vitamins C and E increased the  
viability of breast cancer cells. In contrast, vitamins C and E  
potentiated the cytotoxic effects of the anthraquinones against the colon  
cancer cells. None of the anthraquinones inhibited the activity of  
topoisomerase.

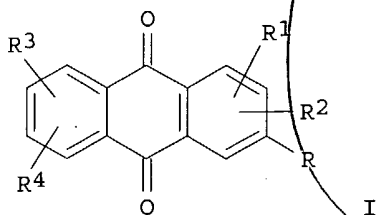
RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2003:856025 CAPLUS  
DN 139:345896  
TI Anthelmintic anthraquinones and method of use thereof  
IN Cichewicz, Robert H.; Nair, Muraleedharan G. Nair; McKerrow, James H.  
PA Michigan State University, USA; The Regents of the University of  
California  
SO PCT Int. Appl., 80 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003089577	A2	20031030	WO 2003-US11303	20030411
	WO 2003089577	A3	20031231		
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	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	US 2003229032	A1	20031211	US 2002-317906	20021212
	US 2004106686	A1	20040603	US 2003-723671	20031126
	US 2004116361	A1	20040617	US 2003-723672	20031126
	US 2004152645	A1	20040805	US 2004-761071	20040120
PRAI	US 2002-372576P	P	20020415		

US 2002-389368P P 20020617  
US 2002-317906 A 20021212  
MARPAT 139:345896

OS  
GI



AB Anthraquinones are described which are anthelmintic and in particular, are useful in compns. for inhibiting *Schistosoma* sp. In vitro or in vivo. The preferred anthraquinones have the formula (I) wherein R1, R2, R3, and R4 are each hydrogen, hydroxy, halogen, alkyl, substituted alkyl, alkene, substituted alkene, alkyne, aryl, substituted aryl, cyclic, substituted cyclic, acid group, carbohydrate, or combination thereof, R is a group containing 1 to 12 carbons such as Me, alkyl, substituted alkyl, aldehyde, hydroxy, hydroxymethyl, acid group, 15 carbohydrate, or combination thereof, and the halogen X is I, F, Br, or Cl. The isolation and characterization of anthraquinones from the roots of daylilies (*Hemerocallis fulva*) is described.

L8 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2002:788802 CAPLUS  
DN 138:52682  
TI Kwanzoquinones A-G and other constituents of *Hemerocallis fulva* 'Kwanzo' roots and their activity against the human pathogenic trematode *Schistosoma mansoni*  
AU Cichewicz, Robert H.; Lim, Kee-Chong; McKerrow, James H.; Nair, Muraleedharan G.  
CS Department of Horticulture and National Food Safety and Toxicology Center, Bioactive Natural Products and Phytoceuticals, Michigan State University, East Lansing, MI, 48824, USA  
SO Tetrahedron (2002), 58(42), 8597-8606  
CODEN: TETRAB; ISSN: 0040-4020  
PB Elsevier Science Ltd.  
DT Journal  
LA English  
AB Schistosomiasis is a debilitating disease caused by parasitic trematodes of the genus *Schistosoma* that afflicts 200 million people worldwide. Daylilies (*Hemerocallis* spp.) have been used in Asia for the treatment of schistosomiasis; however, the active principles have not been fully characterized. In our studies of *Hemerocallis fulva* Kwanzo' Kaempfer roots, we have isolated seven new anthraquinones, kwanzoquinones A (1), B (2), C (4), D (5), E (6), F (7), and G (9), two known anthraquinones, 2-hydroxychrysophanol (3) and rhein (8); one new naphthalene glycoside, 5-hydroxydianellin (11), one known naphthalene glycoside, dianellin (10), one known flavone, 6-methyllyuteolin (12), and  $\alpha$ -tocopherol. The structures of the compds. were elucidated by spectroscopic and chemical methods. Compds. 1-11 and the monacetates of kwanzoquinones A and B, 1a and 2a, resp., were tested for their activity against multiple life-stages of *Schistosoma mansoni*. Compound 3 immobilized all cercariae within 15 s at 3.1  $\mu$ g/mL. However, upon removal of the compound, 20% of the immobilized cercariae recovered after 24 h. In contrast, compound 6 immobilized

cercariae within 12-14 min at 25 µg/mL. Following removal of the compound, all cercariae died within 24 h. The adult worms were also immobilized within 16 h by compds. 3 and 6 at 50 µg/mL. None of the compds. had an effect on the schistosomula stage.

RE.CNT 28      THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1           STRUCTURE UPLOADED

=> s l1

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SAMPLE SCREEN SEARCH COMPLETED -   4884 TO ITERATE

20.5% PROCESSED       1000 ITERATIONS  
INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)  
SEARCH TIME: 00.00.01

0 ANSWERS

FULL FILE PROJECTIONS:   ONLINE   \*\*COMPLETE\*\*  
                          BATCH    \*\*COMPLETE\*\*  
PROJECTED ITERATIONS:       93490 TO   101870  
PROJECTED ANSWERS:           0 TO       0

L2           0 SEA SSS SAM L1

=> s l1 exact full

FULL SEARCH INITIATED 01:48:29 FILE 'REGISTRY'  
FULL SCREEN SEARCH COMPLETED -       55 TO ITERATE

100.0% PROCESSED       55 ITERATIONS  
SEARCH TIME: 00.00.01

1 ANSWERS

L3           1 SEA EXA FUL L1

=> d

L3   ANSWER 1 OF 1   REGISTRY   COPYRIGHT 2004 ACS on STN

RN   58322-78-4   REGISTRY

CN   9,10-Anthracenedione, 1,2,8-trihydroxy-3-methyl- (9CI)   (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN   Anthraquinone, 1,2,8-trihydroxy-3-methyl- (6CI)

OTHER NAMES:

CN   2-Hydroxychrysophanol

FS   3D CONCORD

MF   C15 H10 O5

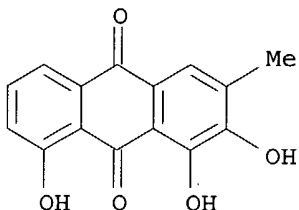
LC   STN Files:   BEILSTEIN\*, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, IPA,  
                  MEDLINE, TOXCENTER, USPATFULL

(\*File contains numerically searchable property data)

DT.CA   Caplus document type:   Journal; Patent

RL.P   Roles from patents:   BIOL (Biological study); OCCU (Occurrence); PREP  
                                  (Preparation); PRP (Properties); USES (Uses)

RL.NP   Roles from non-patents:   BIOL (Biological study); OCCU (Occurrence);  
                                  PREP (Preparation); PRP (Properties); RACT (Reactant or reagent); USES  
                                  (Uses); NORL (No role in record)



Cpd 3

\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

12 REFERENCES IN FILE CA (1907 TO DATE)  
12 REFERENCES IN FILE CAPLUS (1907 TO DATE)  
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

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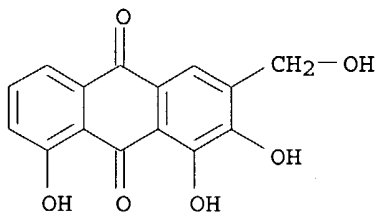
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100.0% PROCESSED 17 ITERATIONS 1 ANSWERS  
SEARCH TIME: 00.00.01

L5 1 SEA EXA FUL L4

=> d l5

L5 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN  
RN ~~479482-94-5 REGISTRY~~  
CN 9,10-Anthracenedione, 1,2,8-trihydroxy-3-(hydroxymethyl)- (9CI) (CA INDEX NAME)  
OTHER NAMES:  
CN Kwanzoquinone E  
FS 3D CONCORD  
MF C15 H10 O6  
SR CA  
LC STN Files: CA, CAPLUS, TOXCENTER, USPATFULL  
DT.CA Caplus document type: Journal; Patent  
RL.P Roles from patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)  
RL.NP Roles from non-patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)



cpd 6

\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

4 REFERENCES IN FILE CA (1907 TO DATE)  
4 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d his

(FILE 'HOME' ENTERED AT 01:46:30 ON 03 SEP 2004)

FILE 'REGISTRY' ENTERED AT 01:47:09 ON 03 SEP 2004  
E 1,2,8-TRIHIDROXY-3-METHYL ANTHRAQUINONE/CN

E 1,2,8-TRIHIDROXY-3-METHYLANTHRAQUINONE/CN  
 L1 STRUCTURE UPLOADED  
 L2 0 S L1  
 L3 1 S L1 EXACT FULL  
 L4 STRUCTURE UPLOADED  
 L5 1 S L4 EXACT FULL

=> file caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	109.72	109.93

FILE 'CAPLUS' ENTERED AT 01:49:49 ON 03 SEP 2004  
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FILE COVERS 1907 - 3 Sep 2004 VOL 141 ISS 10  
 FILE LAST UPDATED: 1 Sep 2004 (20040901/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l3 or l5

12 L3  
 4 L5  
 L6 12 L3 OR L5

=> s l6 and trematode or flatworm or fluke or trematoda

1259 TREMATODE  
 539 TREMATODES  
 1496 TREMATODE  
 (TREMATODE OR TREMATODES)  
 311 FLATWORM  
 193 FLATWORMS  
 412 FLATWORM  
 (FLATWORM OR FLATWORMS)  
 1171 FLUKE  
 675 FLUKES  
 1504 FLUKE  
 (FLUKE OR FLUKES)  
 313 TREMATODA  
 L7 2165 L6 AND TREMATODE OR FLATWORM OR FLUKE OR TREMATODA

=> s trematode or flatworm or fluke or trematoda

1259 TREMATODE  
 539 TREMATODES  
 1496 TREMATODE  
 (TREMATODE OR TREMATODES)

311 FLATWORM  
 193 FLATWORMS  
 412 FLATWORM  
 (FLATWORM OR FLATWORMS)  
 1171 FLUKE  
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 313 TREMATODA  
 L8 3259 TREMATODE OR FLATWORM OR FLUKE OR TREMATODA

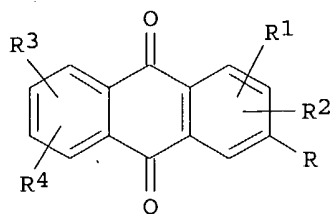
=> s l8 and l6

L9 2 L8 AND L6

=> d bib abs 1-2 l9

L9 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:856025 CAPLUS  
 DN 139:345896  
 TI Anthelmintic anthraquinones and method of use thereof  
 IN Cichewicz, Robert H.; Nair, Muraleedharan G. Nair; McKerrow, James H.  
 PA Michigan State University, USA; The Regents of the University of California  
 SO PCT Int. Appl., 80 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003089577	A2	20031030	WO 2003-US11303	20030411
	WO 2003089577	A3	20031231		
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2003229032	A1	20031211	US 2002-317906	20021212
	US 2004106686	A1	20040603	US 2003-723671	20031126
	US 2004116361	A1	20040617	US 2003-723672	20031126
	US 2004152645	A1	20040805	US 2004-761071	20040120
PRAI	US 2002-372576P	P	20020415		
	US 2002-389368P	P	20020617		
	US 2002-317906	A	20021212		
OS	MARPAT 139:345896				
GI					



I

AB Anthraquinones are described which are anthelmintic and in particular, are useful in compns. for inhibiting *Schistosoma* sp. In vitro or in vivo. The preferred anthraquinones have the formula (I) wherein R1, R2, R3, and R4 are each hydrogen, hydroxy, halogen, alkyl, substituted alkyl, alkene, substituted alkene, alkyne, aryl, substituted aryl, cyclic, substituted cyclic, acid group, carbohydrate, or combination thereof, R is a group containing 1 to 12 carbons such as Me, alkyl, substituted alkyl, aldehyde, hydroxy, hydroxymethyl, acid group, 15 carbohydrate, or combination thereof, and the halogen X is I, F, Br, or Cl. The isolation and characterization of anthraquinones from the roots of daylilies (*Hemerocallis fulva*) is described.

L9 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:788802 CAPLUS

DN 138:52682

TI Kwanzoquinones A-G and other constituents of *Hemerocallis fulva* 'Kwanzo' roots and their activity against the human pathogenic **trematode** *Schistosoma mansoni*

AU Cichewicz, Robert H.; Lim, Kee-Chong; McKerrow, James H.; Nair, Muraleedharan G.

CS Department of Horticulture and National Food Safety and Toxicology Center, Bioactive Natural Products and Phytoceuticals, Michigan State University, East Lansing, MI, 48824, USA

SO Tetrahedron (2002), 58(42), 8597-8606

CODEN: TETRAB; ISSN: 0040-4020

PB Elsevier Science Ltd.

DT Journal

LA English

AB Schistosomiasis is a debilitating disease caused by parasitic **trematodes** of the genus *Schistosoma* that afflicts 200 million people worldwide. Daylilies (*Hemerocallis* spp.) have been used in Asia for the treatment of schistosomiasis; however, the active principles have not been fully characterized. In our studies of *Hemerocallis fulva* 'Kwanzo' Kaempfer roots, we have isolated seven new anthraquinones, kwanzoquinones A (1), B (2), C (4), D (5), E (6), F (7), and G (9), two known anthraquinones, 2-hydroxychrysophanol (3) and rhein (8), one new naphthalene glycoside, 5-hydroxydianellin (11), one known naphthalene glycoside, dianellin (10), one known flavone, 6-methyluteolin (12), and  $\alpha$ -tocopherol. The structures of the compds. were elucidated by spectroscopic and chemical methods. Compds. 1-11 and the monoacetates of kwanzoquinones A and B, 1a and 2a, resp., were tested for their activity against multiple life-stages of *Schistosoma mansoni*. Compound 3 immobilized all cercariae within 15 s at 3.1  $\mu$ g/mL. However, upon removal of the compound, 20% of the immobilized cercariae recovered after 24 h. In contrast, compound 6 immobilized cercariae within 12-14 min at 25  $\mu$ g/mL. Following removal of the compound, all cercariae died within 24 h. The adult worms were also immobilized within 16 h by compds. 3 and 6 at 50  $\mu$ g/mL. None of the compds. had an effect on the schistosomula stage.

RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT



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L10 STRUCTURE UPLOADED

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1 ANSWERS

SEARCH TIME: 00.00.01

L11 1 SEA EXA FUL L10

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L11 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN

RN 479482-95-6 REGISTRY

CN 9,10-Anthracenedione, 3-[( $\beta$ -D-glucopyranosyloxy)methyl]-1,2,8-trihydroxy- (9CI) (CA INDEX NAME)

OTHER NAMES:

CN Kwanzoquinone F

FS STEREOSEARCH

MF C21 H20 O11

SR CA

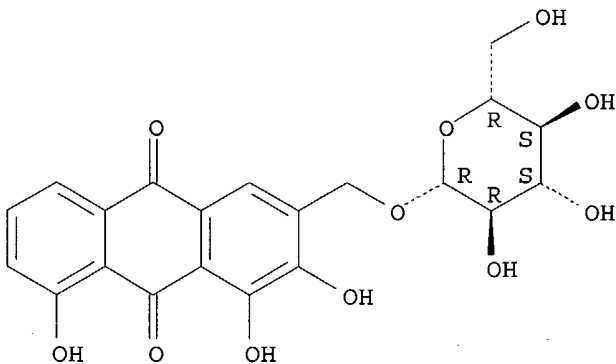
LC STN Files: CA, CAPLUS, TOXCENTER

DT.CA Caplus document type: Journal; Patent

RL.P Roles from patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)

RL.NP Roles from non-patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)

Absolute stereochemistry. Rotation (-).



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

3 REFERENCES IN FILE CA (1907 TO DATE)

3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

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L13 709980 12

=> s l12 full exact  
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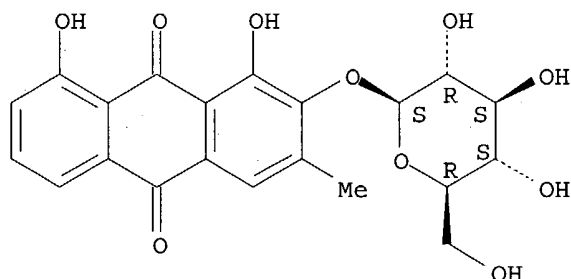
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L14 1 SEA EXA FUL L12

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L14 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN  
RN 479482-92-3 REGISTRY  
CN 9,10-Anthracenedione, 2-( $\beta$ -D-glucopyranosyloxy)-1,8-dihydroxy-3-methyl- (9CI) (CA INDEX NAME)  
OTHER NAMES:  
CN Kwanzoquinone C  
FS STEREOSEARCH  
MF C21 H20 O10  
SR CA  
LC STN Files: CA, CAPLUS, TOXCENTER, USPATFULL  
DT.CA Caplus document type: Journal; Patent  
RL.P Roles from patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)  
RL.NP Roles from non-patents: BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); PRP (Properties); USES (Uses)

Absolute stereochemistry. Rotation (-).



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

4 REFERENCES IN FILE CA (1907 TO DATE)  
4 REFERENCES IN FILE CAPLUS (1907 TO DATE)

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L15 STRUCTURE UPLOADED

=> s l15 exact full  
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FULL SCREEN SEARCH COMPLETED - 0 TO ITERATE

100.0% PROCESSED            0 ITERATIONS            0 ANSWERS  
SEARCH TIME: 00.00.01

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=> d his

(FILE 'HOME' ENTERED AT 01:46:30 ON 03 SEP 2004)

FILE 'REGISTRY' ENTERED AT 01:47:09 ON 03 SEP 2004  
E 1,2,8-TRIHIDROXY-3-METHYL ANTHRAQUINONE/CN  
E 1,2,8-TRIHIDROXY-3-METHYLANTHRAQUINONE/CN  
STRUCTURE UPLOADED

L1  
L2            0 S L1  
L3            1 S L1 EXACT FULL  
L4            STRUCTURE UPLOADED  
L5            1 S L4 EXACT FULL

FILE 'CAPLUS' ENTERED AT 01:49:49 ON 03 SEP 2004

L6            12 S L3 OR L5  
L7            2165 S L6 AND TREMATODE OR FLATWORM OR FLUKE OR TREMATODA  
L8            3259 S TREMATODE OR FLATWORM OR FLUKE OR TREMATODA  
L9            2 S L8 AND L6

FILE 'REGISTRY' ENTERED AT 01:59:19 ON 03 SEP 2004

L10           STRUCTURE UPLOADED  
L11           1 S L10 FULL EXACT  
L12           STRUCTURE UPLOADED  
L13           709980 S 12 FULL EXACT  
L14           1 S L12 FULL EXACT  
L15           STRUCTURE UPLOADED  
L16           0 S L15 EXACT FULL

=> file caplus

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FILE COVERS 1907 - 3 Sep 2004 VOL 141 ISS 10  
FILE LAST UPDATED: 1 Sep 2004 (20040901/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l11 or l14

3 L11

4 L14

L17 4 L11 OR L14

=> s l17 and l7

L18 2 L17 AND L7

=> d bib abs 1-2 l18

L18 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:856025 CAPLUS

DN 139:345896

TI Anthelmintic anthraquinones and method of use thereof

IN Cichewicz, Robert H.; Nair, Muraleedharan G. Nair; McKerrow, James H.

PA Michigan State University, USA; The Regents of the University of California

SO PCT Int. Appl., 80 pp.

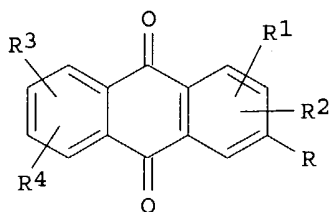
CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003089577	A2	20031030	WO 2003-US11303	20030411
	WO 2003089577	A3	20031231		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	US 2003229032	A1	20031211	US 2002-317906	20021212
	US 2004106686	A1	20040603	US 2003-723671	20031126
	US 2004116361	A1	20040617	US 2003-723672	20031126
	US 2004152645	A1	20040805	US 2004-761071	20040120
PRAI	US 2002-372576P	P	20020415		
	US 2002-389368P	P	20020617		
	US 2002-317906	A	20021212		
OS	MARPAT 139:345896				
GI					



AB Anthraquinones are described which are anthelmintic and in particular, are useful in compns. for inhibiting *Schistosoma* sp. In vitro or in vivo. The preferred anthraquinones have the formula (I) wherein R1, R2, R3, and R4 are each hydrogen, hydroxy, halogen, alkyl, substituted alkyl, alkene, substituted alkene, alkyne, aryl, substituted aryl, cyclic, substituted cyclic, acid group, carbohydrate, or combination thereof, R is a group containing 1 to 12 carbons such as Me, alkyl, substituted alkyl, aldehyde, hydroxy, hydroxymethyl, acid group, 15 carbohydrate, or combination thereof, and the halogen X is I, F, Br, or Cl. The isolation and characterization of anthraquinones from the roots of daylilies (*Hemerocallis fulva*) is described.

L18 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN  
AN 2002:788802 CAPLUS  
DN 138:52682  
TI Kwanzoquinones A-G and other constituents of *Hemerocallis fulva* 'Kwanzo' roots and their activity against the human pathogenic **trematode** *Schistosoma mansoni*  
AU Cichewicz, Robert H.; Lim, Kee-Chong; McKerrow, James H.; Nair, Muraleedharan G.  
CS Department of Horticulture and National Food Safety and Toxicology Center, Bioactive Natural Products and Phytochemicals, Michigan State University, East Lansing, MI, 48824, USA  
SO Tetrahedron (2002), 58(42), 8597-8606  
CODEN: TETRAB; ISSN: 0040-4020  
PB Elsevier Science Ltd.  
DT Journal  
LA English  
AB Schistosomiasis is a debilitating disease caused by parasitic **trematodes** of the genus *Schistosoma* that afflicts 200 million people worldwide. Daylilies (*Hemerocallis* spp.) have been used in Asia for the treatment of schistosomiasis; however, the active principles have not been fully characterized. In our studies of *Hemerocallis fulva* Kwanzo' Kaempfer roots, we have isolated seven new anthraquinones, kwanzoquinones A (1), B (2), C (4), D (5), E (6), F (7), and G (9), two known anthraquinones, 2-hydroxychrysophanol (3) and rhein (8), one new naphthalene glycoside, 5-hydroxydianellin (11), one known naphthalene glycoside, dianellin (10), one known flavone, 6-methyllyuteolin (12), and  $\alpha$ -tocopherol. The structures of the compds. were elucidated by spectroscopic and chemical methods. Compds. 1-11 and the monoacetates of kwanzoquinones A and B, 1a and 2a, resp., were tested for their activity against multiple life-stages of *Schistosoma mansoni*. Compound 3 immobilized all cercariae within 15 s at 3.1  $\mu$ g/mL. However, upon removal of the compound, 20% of the immobilized cercariae recovered after 24 h. In contrast, compound 6 immobilized cercariae within 12-14 min at 25  $\mu$ g/mL. Following removal of the compound, all cercariae died within 24 h. The adult worms were also immobilized within 16 h by compds. 3 and 6 at 50  $\mu$ g/mL. None of the compds. had an effect on the schistosomula stage.

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